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EDITORIAL.

MOST COLLEGE teachers of botany who are fit for their places would, we doubt not, greatly prefer to have pupils come to them without previous instruction (?) in botany than with the usual sort, which needs first of all eradication. For many of these false ideas the text books are responsible; for many the teachers. Misleading analogies are often suggested in text books, in books for popular reading, in lectures, and now they are appearing in alarming numbers in the bulletins of the agricultural experiment stations. The laudable object is always to make the statements more intelligible; in which object they often fail, and succeed only in implanting faulty conceptions. Two of these misleading analogies will serve as illustrations. No phrase is more common than "stomata, or *breathing*-pores," and it inevitably connects these apertures with respiration, with which they have almost, or quite, nothing to do. As well call the perspiratory ducts of the human skin "breathing-tubes"! The former analogy is as thoroughly false as the latter. Why not say air-pores if we must have an English form? Respiration is already weighted to the last limit with misunderstandings; this millstone ought to be removed from its neck. "Spores *i. e.*, bodies that are like seeds in use" — does that analogy illuminate or obscure? The writer from whom this is taken was speaking of conidia, which are much more "like" cuttings or slips in use than like seeds. But why compare at all seeds and spores, mycelium and roots, conidiophores and peduncles? Why not let it be understood from the outset that the fungi are not comparable with the phanerogams? Their structure is simple enough to be understood if described without comparison. When analogy in function is predicated, inferences of similarity in structure, wrong as they may be, are made unconsciously when one object is well known and the other wholly unknown. Examples might be multiplied. Let the teacher in the class-room, before an audience, and in popular bulletins scrupulously avoid misleading analogies.

CURRENT LITERATURE.

Adaptations to Pollination.[1]

This is a continuation of a work published in 1888 as Heft No. 10 of the Bibliotheca Botanica, and noticed in the *Gazette*, xiii, 134. The observations recorded in this volume were made in middle Germany and in the lower and higher regions of the Tyrol, in the years 1886–1888. 171 pages are devoted to a consideration of the adaptations of different flowers, which are taken up in their natural order, there being 187 species belonging to thirty-eight families. After many of the larger families there are summaries of the results. Pages 172–224 are devoted to several topics which the author has reserved for special consideration. Thus on pages 203-224 the author gives a list of perforated flowers which he found in two years, 1887-'8, stating the position of the perforations and the insects which make them. The list contains about 160 flowers, 125 of them being perforated by a single species of bumble-bee, Bombus terrestris.—R.

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[1] AUGUST SCHULZ.—Beitræge zur Kenntniss der Bestæubungseinrichtungen und Geschlechtsvertheilung bei den Pflanzen, Vol. II. Bibliotheca Botanica, Heft no. 17, I & II. Cassel: Theodor Fischer, 1890.

The Missouri Botanic Garden.

A hand-book of the Missouri Botanical Garden has just been issued, which in a very handsome and elaborate way gives the objects of the Garden and School of Botany, and the principal steps which have thus far been taken to forward them. The book contains 165 pages and is issued under the editorial supervision of Dr. Trelease. There are numerous handsome illustrations and a large scale map of the Garden. In addition to the presentation of the facts of organization and plans of work the book contains Mr. Thomas Dimmock's biographical sketch of Mr. Henry Shaw; Mr. Shaw's will; Dr. Trelease's inaugural address; the first annual "flower sermon" by the Rt. Rev. Daniel S. Tuttle, Bishop of Missouri; and the speeches at the first annual banquet.

Minor Notices.

THAT IMPORTANT WORK, *Die Natürlichen Pflanzenfamilien*, has now reached lieferung 54, which contains a continuation of Compositæ by Hoffman. The genera are brought up to Achillea, which is no. 545. The North American genera are very much as Dr. Gray left them, and American work in general has been adopted. This may be explained in some cases by lack of material for verification.

PART II of the Proceedings of Philadelphia Academy of Science for 1890 has been distributed and contains the following botanical titles: Descriptions of three new species of Myxomycetes, with notes on other forms in Century XXV of the N. A. F., by *Geo. A. Rex;* New N. Am. Fungi, by *J. B. Ellis and B. M. Everhart;* and Contributions to the life-histories of plants, No. 5, by *Thos. Meehan.* The contents of Mr. Meehan's contribution have been noted in this journal (xv. 345).

MESSRS. LAZENBY AND WERNER, of the Ohio State University, have published a supplementary list to the Beardslee catalogue of Ohio plants. This supplement is put out to give information as to the plants that have been discovered in Ohio since 1874, and also to call forth additional information preparatory to the publication of a complete revised catalogue. The supplement adds 177 species of Phanerogams.

THOSE WHO are interested in the relation of flowers and insects will welcome the list of books, memoirs, etc., on the fertilization of flowers for the period 1883-9, a continuation of the list published in 1883 by D'Arcy Thompson.[1] Such bibliographies are of great value and Mr. J. MacLeod has placed the workers in this field under obligations.

OPEN LETTERS.

Mounting plants.

The recent excellent note of Theo. Holm on this subject prompts me to say a few words, more especially in regard to mounting grasses. In the collection at our college the plants are held to the sheets by means of stout strips of gummed paper, often a quarter of an inch wide, or even more for securing heavy specimens. It has recently been my privilege to turn over nearly all the grasses in the herbarium of Harvard University, where they are secured to the sheets by means of glue. If well done, and the plants are not too thick and heavy, and not sent to and fro by mail or express, the glue holds the smaller, thinner specimens very well, but those with heavy culms or rootstocks spring loose in many cases, and then are usually to be "patched up" by pasting on gummed strips. The glue process would tend to prevent theft of small fragments or spikelets of valuable specimens, but it also makes it difficult to turn over or partially over a spikelet or leaf blade or sheath to observe a ligule or other part not mounted right-side out. Quite frequently specimens mounted in this way are considerably disfigured by surplus glue, and patches of the coarse paper upon which the specimen was placed while the glue was applied are left sticking here and there, like morbid tufts of a peculiar pubescence. For working specimens of grasses and sedges and similar plants, my experience leads me to favor decidedly the method of pasting by means of strips of paper. Happily, there is a rapidly growing tendency among botanists of our country to collect, preserve, and mount specimens which are more complete than those usually put up by the older botanists of a generation or two ago. Such collectors as Pringle, whose specimens have found their way into the herbaria of many botanists, have served to stimulate better work. There is another thing which does not yet receive the attention it deserves, viz.: the collecting and preservation of surplus flowers, fruits, seeds, spikelets,. etc., loosely placed on most sheets and held by an envelope or folder. This whole subject with an abundance of illustrations would be an admirable one for some thorough and neat enthusiast to present to the botanical club of A. A. A. S. or even to the section of biology.—W. J. BEAL, *Agricultural College, Mich.*

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[1] Separately printed from the Botanisch Jaarboek, tweede Jaargang (1890) pp. 195-254.